Contribution ID: **43** Type: **Talk**

Discrimination of electron recoils from nuclear recoils in two-phase xenon time projection chambers

Friday 27 March 2020 14:45 (15 minutes)

The two-phase liquid xenon time projection chamber is one of the leading technologies used for dark matter direct detection. World-leading limits on dark matter interactions have been set by LUX and XENON1T, and the upcoming LZ and XENONnT experiments seek to push further. A crucial part of using this technology is being able to classify energy deposits as nuclear recoils (NR) or electron recoils (ER). In my talk, I will discuss how ER-NR discrimination can influence the performance of future detectors, informed by our analysis of LUX calibration data. I will focus on this via two paradigms: effects on discrimination from detector parameters like electric field and light collection, and from physical variables like pulse-shape and energy. I will also discuss the physical origins of fluctuations in electron recoil signals and how LUX data can inform our understanding of these effects.

Primary author: VELAN, Vetri (University of California, Berkeley)

Presenter: VELAN, Vetri (University of California, Berkeley)

Session Classification: Session 13

Track Classification: Non-directional direct dark matter detection